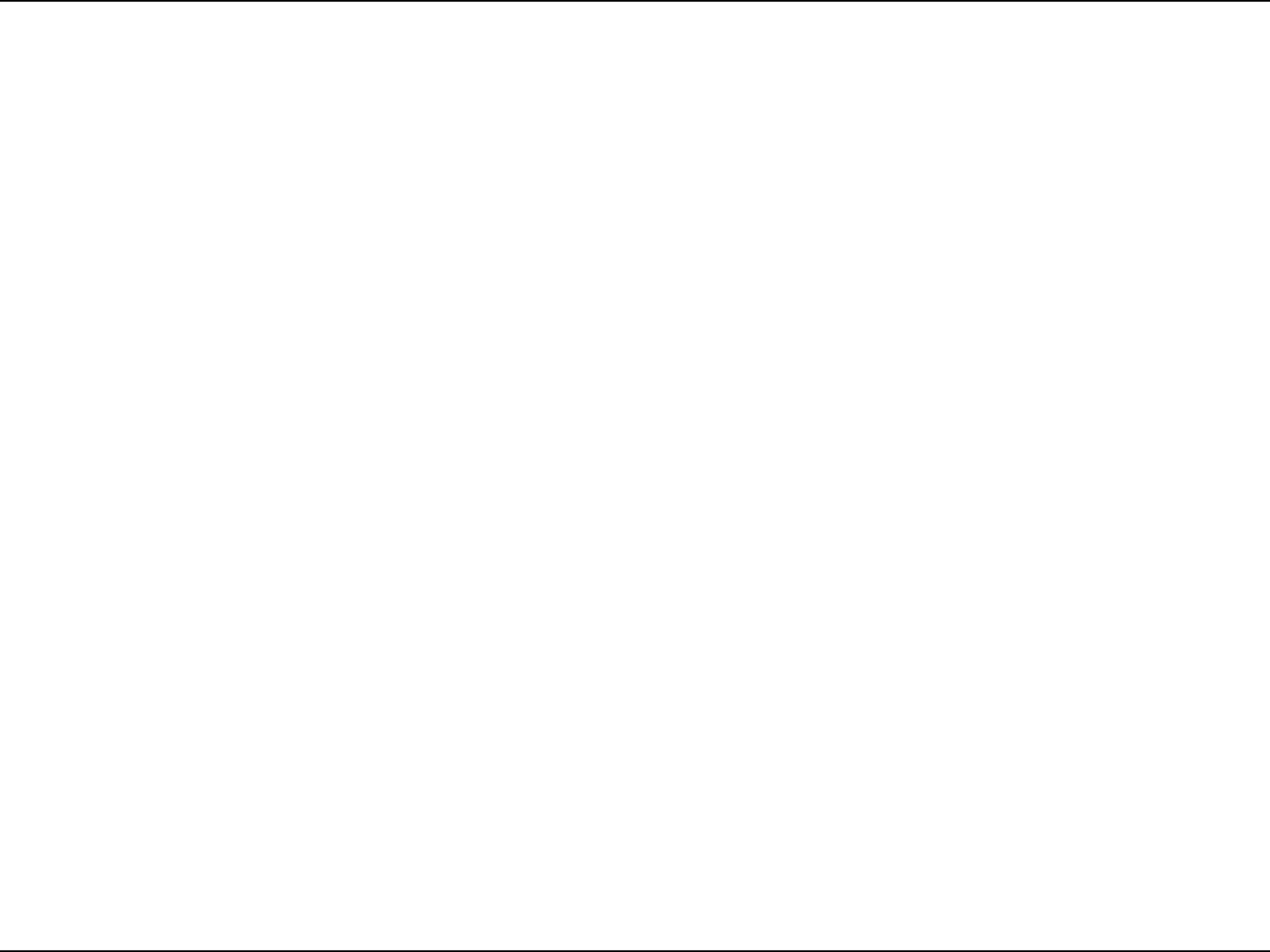




JONES ROAD GROUND WATER PLUME SUPERFUND SITE HOUSTON, TEXAS

Remedial Action
Priority Panel Meeting
March 6-7, 2012





Site Background

- Former dry cleaner (Bell Dry Cleaners) located at 11600 Jones Road
- Operated from about 1988 until 2002
- Perchloroethylene (PCE), also known as tetrachloroethylene, was used as the dry cleaning solvent
- Waste PCE may have been disposed to the septic system or to the storm sewer located behind the shopping center
- Contaminants of concern (COCs) include PCE and PCE breakdown products: Trichloroethylene (TCE); cis-1,2-dichloroethylene (DCE); Vinyl Chloride (VC)



Site Background

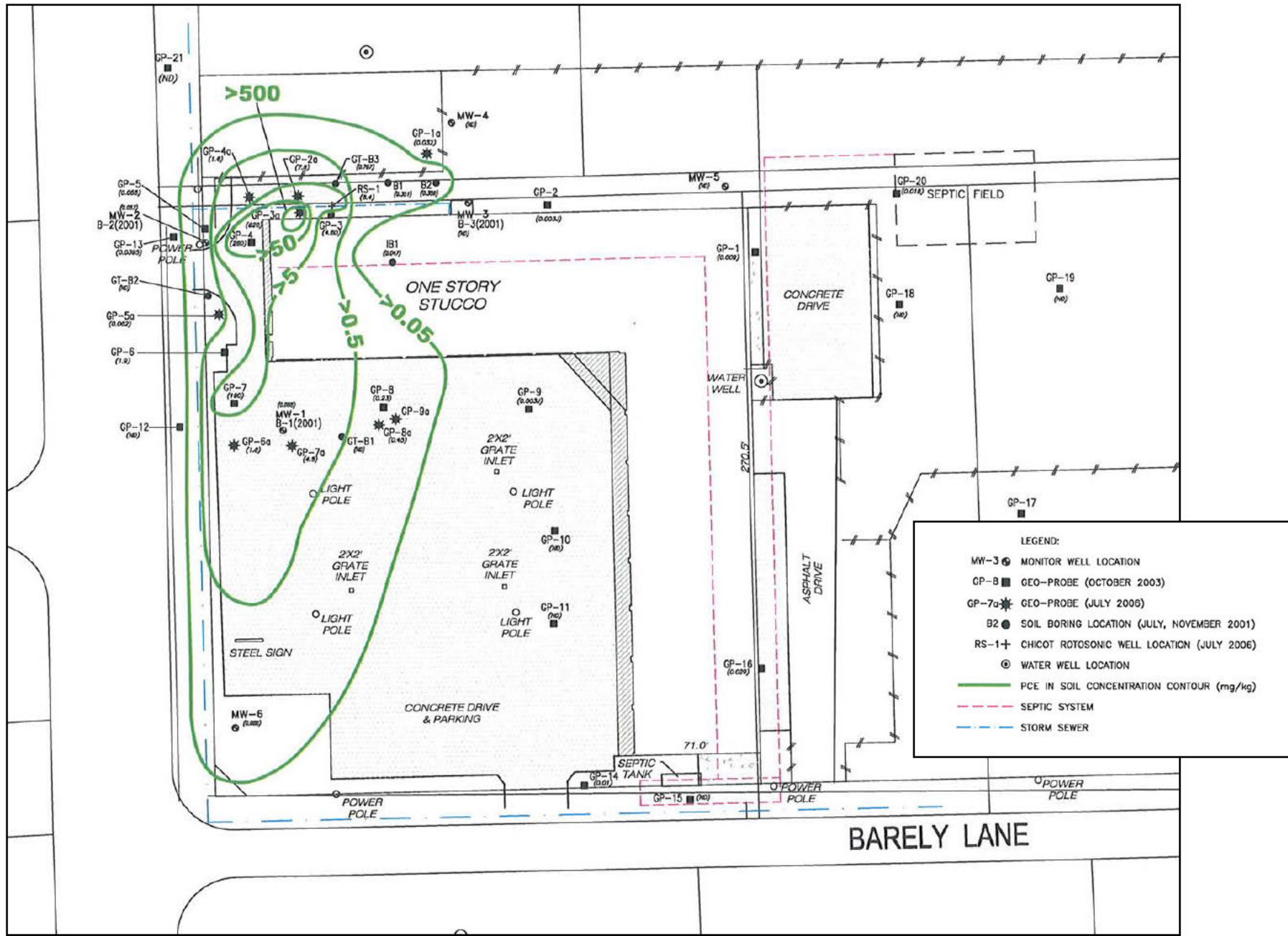
- December 2000, May 2001: Public Water Supply (PWS) well sampled at the former Finch's Gymnastics (1/2 mile southeast of dry cleaner)
- PCE levels above EPA's maximum contaminant level (MCL) of 5 micrograms per liter (µg/L)
- Dry cleaner identified as source of PCE in PWS well
- September 10, 2001: Owners of dry cleaner entered TCEQ Voluntary Cleanup Program (VCP)
- April 11, 2002: Owner withdrew from the VCP citing potential multiple sources of contamination and scope of work was financially beyond their capabilities
- February 2002: Quarterly sampling program initiated by TCEQ for private wells
- September 29, 2003: The Site was finalized to EPA's National Priorities List (NPL)



Removal Action

- EPA conducted a time-critical removal action that included the installation of a water line and connections to homes and businesses
- Construction of the water line began in January 2008 and was completed in November 2008
- A total of 144 service connections were completed
- Waterline is serviced by the White Oak Bend Municipal Utility District

Extent of PCE in Soil

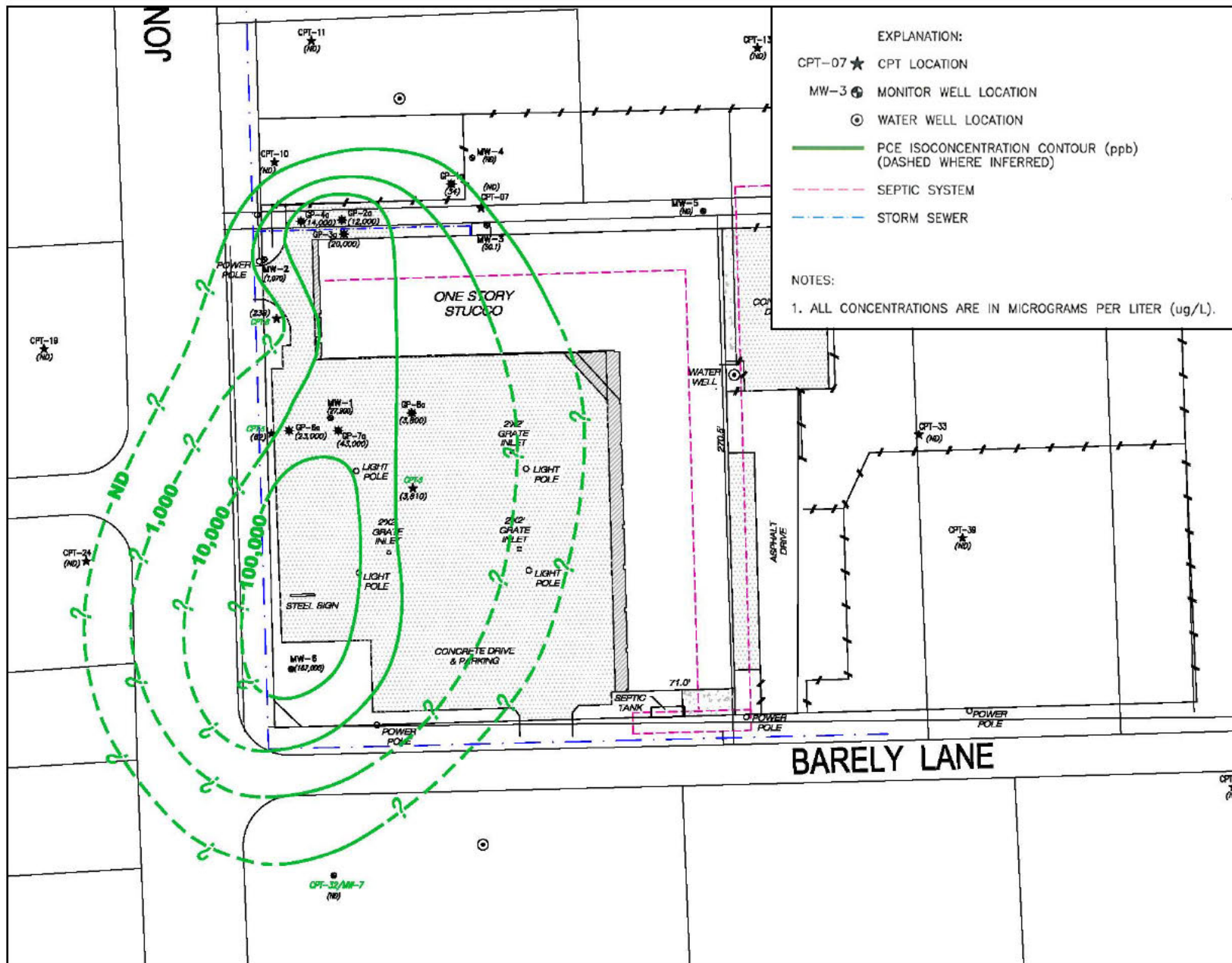




Groundwater Investigations

- Two major aquifers identified
 - Chicot Aquifer: begins about 20 to 35 feet below ground surface.
 - 5 water bearing units in the Chicot
 - Evangeline Aquifer: begins about 400 feet below ground surface.
 - 7 water bearing units in the Evangeline

PCE Distribution – Shallow Groundwater



Extent of PCE in Deep Groundwater





Cleanup Objectives

- Prevent future human exposure to contaminated ground water at unacceptable risk levels;
- Prevent or minimize further migration of contaminants from source materials to groundwater (source control);
- Prevent or minimize further migration of the contaminant plume (plume containment); and
- Return ground waters to its expected beneficial uses wherever practicable (aquifer restoration).



Groundwater Remediation Goals

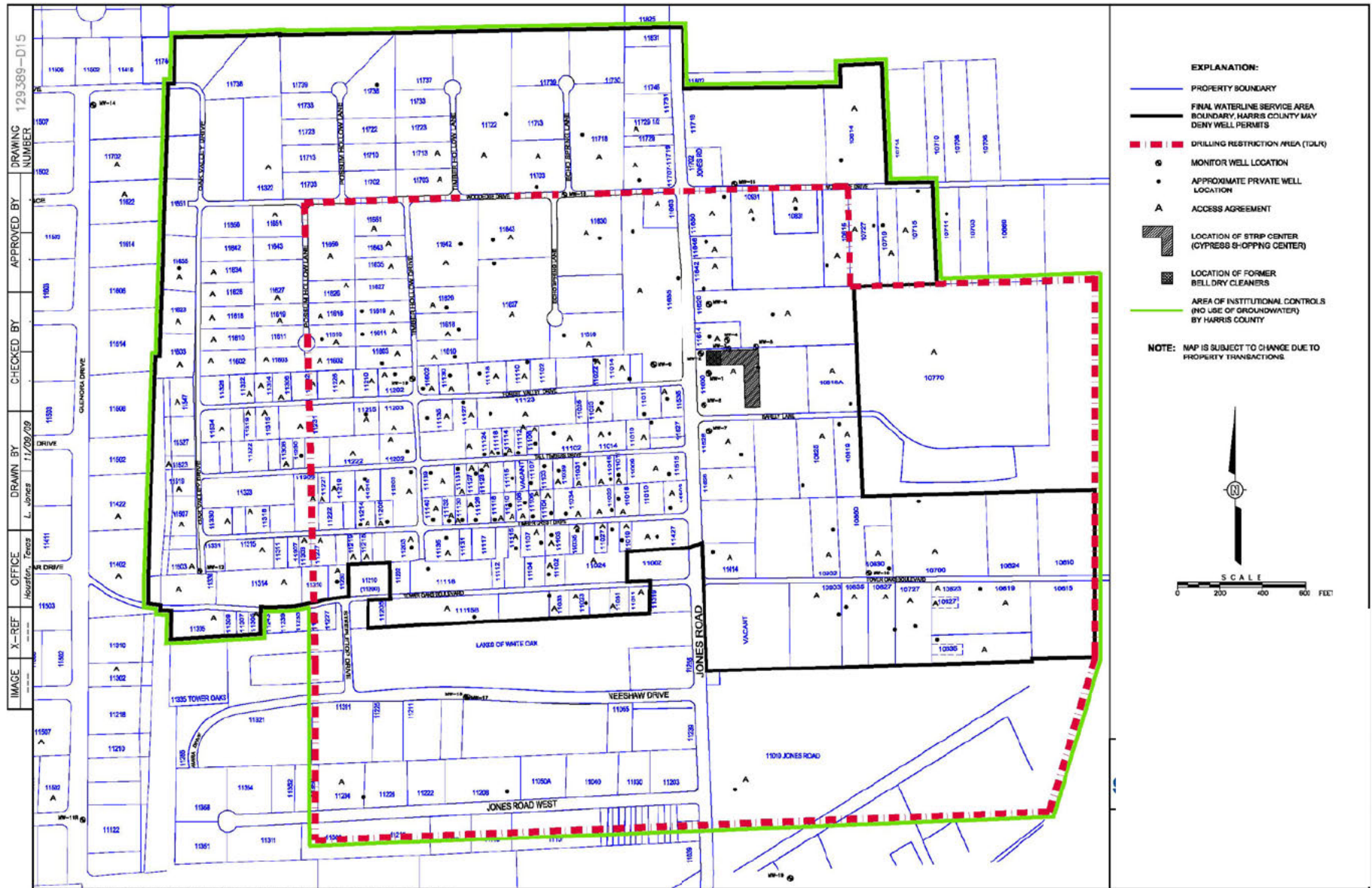
- Remediation goals for groundwater are set equal to the MCLs.
 - Perchloroethylene 5 µg/L
 - Trichloroethylene 5 µg/L
 - cis-1,2-Dichloroethylene 70 µg/L
 - trans-1,2-Dichloroethylene 100 µg/L
 - Vinyl Chloride 2 µg/L



Summary of Remedial Alternatives

- Alternatives proposed to meet cleanup objectives and remediation goals
- All of the alternatives have common components
 - Institutional Controls
 - Groundwater Monitoring
 - Indoor Air Sampling
 - Operation and Maintenance
 - Five Year Reviews

Groundwater Well Restriction Areas





Summary of Remedial Alternatives

Alternative	Description	Cost Present Worth
Alternative 1	No Action	\$ 0
Alternative 2	In-Situ Treatment	\$2,810,000
Alternative 3	Hydraulic Containment / Pump And Treat	\$4,768,000
Alternative 4	In-Situ Enhancements to Pump and Treat	\$5,949,000



Alternative 2

In-Situ Treatment

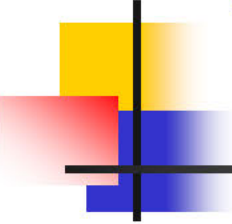
- In-situ chemical oxidation (ISCO) for source area soil and groundwater
- Bioaugmentation for the deep groundwater plume to increase natural attenuation
- ISCO: 2 applications at approximately 140 locations in source area
- Bioaugmentation: 4 applications at 10 most contaminated wells
- Pilot study to determine injection radius of influence and effectiveness of ISCO and bioaugmentation treatments



Alternative 3

Hydraulic Containment / Pump and Treat

- Pump groundwater from both the source area and the deep groundwater zones to prevent further migration of PCE
- Exact number and location of extraction wells and location of treatment plant to be determined in Remedial Design
- Groundwater to be treated using an air stripper and granulated activated carbon
- Treated groundwater would be released to the HCFCFCD drainage ditch, contingent on approval, discharged to sanitary sewer and POTW, if available, or reinjected to offset potential subsidence.
- Cost estimate based on reinjection of treated groundwater



Alternative 4 (Preferred Alternative)

In-Situ Enhancements to Pump and Treat

- ISCO applied to soil and shallow groundwater in the source area
- Bioaugmentation for the deep groundwater plume
- Pump and treat of groundwater for hydraulic control (not necessary in source area following ISCO treatment)